

(12) UK Patent Application

(19) GB

(11) 2 229 317 A (13)

(43) Date of A publication 19.09.1990

(21) Application No 9005061.8

(22) Date of filing 07.03.1990

(30) Priority data

(31) 3907471

(32) 08.03.1989

(33) DE

(71) Applicant

Rittal-Werk Rudolf Loh GmbH & Co KG

(Incorporated in the Federal Republic of Germany)

Auf dem Stötzelberg, D-6348 Herborn,
Federal Republic of Germany

(72) Inventors

Helmut Sch fer
Jörgen Zachral

(74) Agent and/or Address for Service

Potts Kerr and Co
15 Hamilton Square, Birkenhead, Merseyside,
L41 6BR, United Kingdom

(51) INT CL⁵

H02B 1/30

(52) UK CL (Edition K)

H1N NVX N593

E2A AAG A106 A160 A171 A199 A412 A414 A510

U1S S1786 S2062

(56) Documents cited

GB 1126862 A GB 0729218 A US 3573559 A

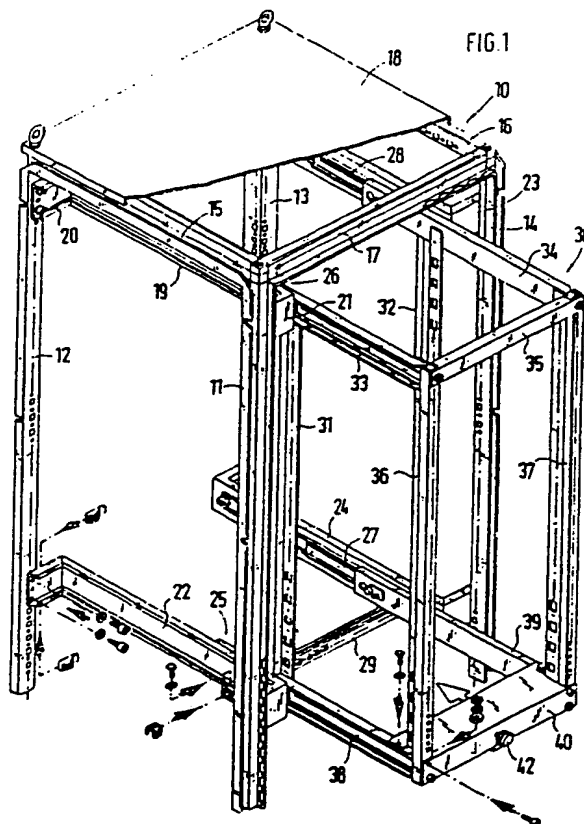
(58) Field of search

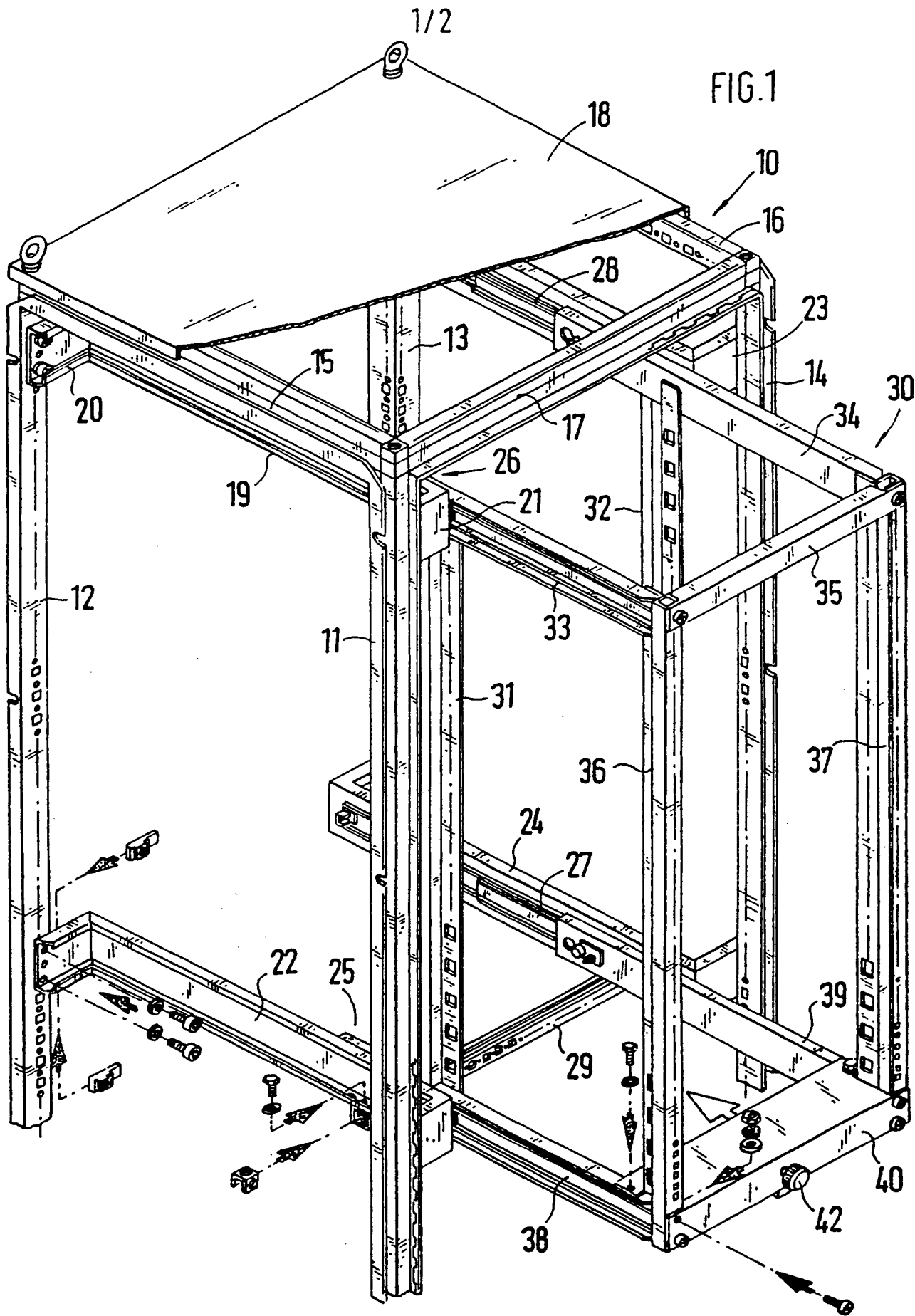
UK CL (Edition J) A4B, H1N NVA NVD NVE NVX

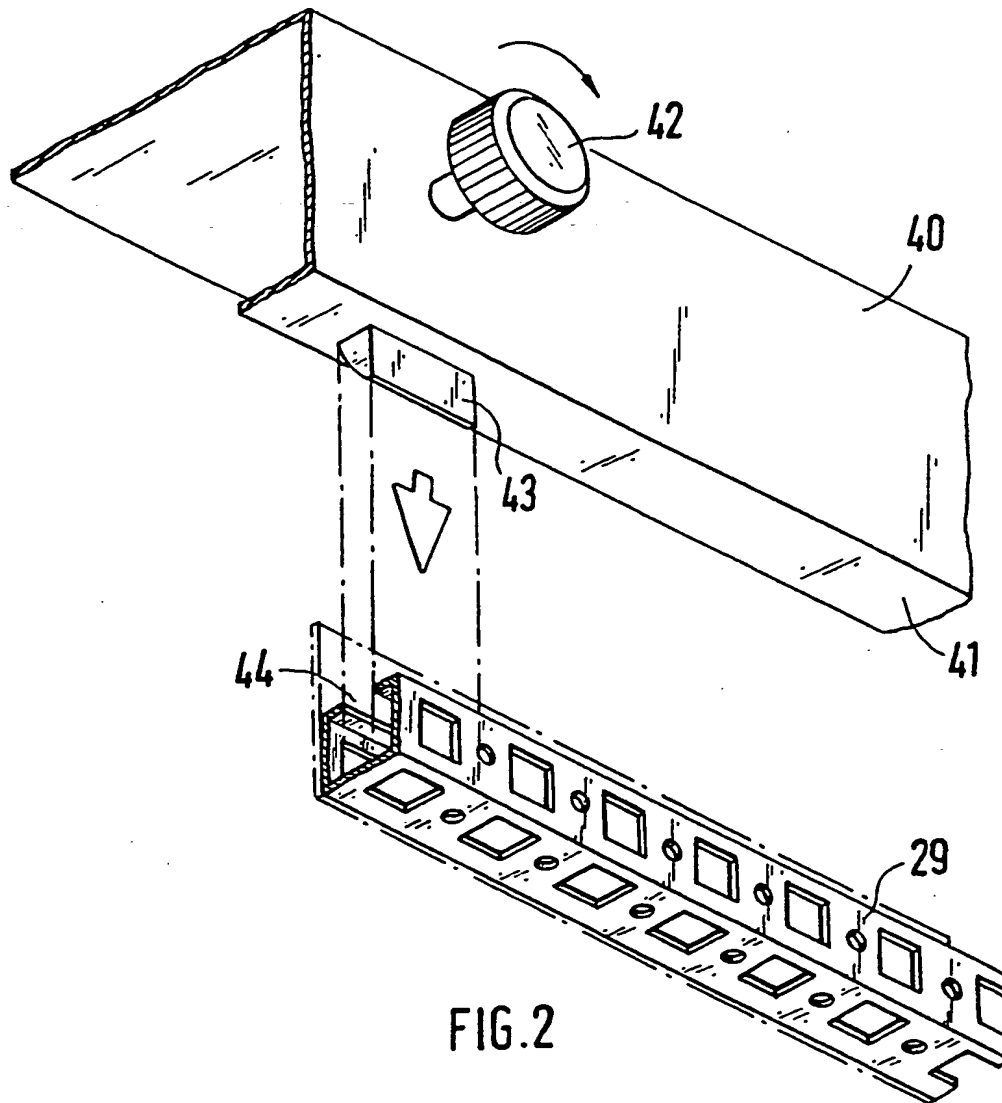
INT CL⁴ A47B, H02B

(54) Switchgear cabinets

(57) A switchgear cabinet includes an extensible frame 30 for the installation of component carriers mounted so as to be extensible from the body of the switchgear cabinet by means of horizontally extending telescopic bars 25-28 secured to a frame 10 of the switchgear cabinet. The extensible frame 30 is secured in a retracted position by a spring loaded bolt mounted on the front 40 of the extensible frame 30 which engages behind an abutment 29 fixed to the cabinet body. The spring loaded bolt is released from its locking position by a handle 42 which is also used for withdrawing the frame 30 from the cabinet body.







A SWITCHGEAR CABINET HAVING AN EXTENSIBLE FRAME

The invention relates to a switchgear cabinet having an extensible frame for the installation of component carriers or the like, which switchgear cabinet is arranged so as to be extensible from the body of the switchgear cabinet by means of horizontally extending telescopic bars, the telescopic bars being secured to a frame of the switchgear cabinet.

Known switchgear cabinets of this type have the advantage that the apparatus contained in the component carriers is also accessible at the wiring end when the extensible frame is extended from the body of the switchgear cabinet. In order to be able to limit the extension movement, expensive telescopic bars are frequently used with defined end positions, whereby the end positions are also defined by adjustable stop members. In addition, the extensible frame is provided with an extension handle, whereby the extensible frame can be extended from the body of the cabinet.

It is an object of the invention to provide a switchgear cabinet of the first mentioned type, wherein the extensible frame can easily be drawn from the body of the cabinet and, in such case, the locking of the extensible frame in the retracted position can also be released simultaneously by means of a handle.

According to the invention, this object is achieved, in that a spring-loaded bolt is mounted on the extensible frame in the region of the front end, facing

the opening in the cabinet body, which bolt engages behind an abutment, which is fixed to the cabinet body, when the extensible frame is in its retracted position, and secures the extensible frame in this retracted position, and in that a handle is associated with the bolt, by means of which handle the locked position of the bolt is releasable by a pulling and/or rotational movement and the extensible frame is drawn from the cabinet body.

The bolt can be released from its locked position by means of the handle, and then the extensible frame can be drawn from the cabinet body. One hand and a simple manipulation are sufficient for this purpose. The handle only needs to be grasped, turned or respectively pulled, and then the frame can be drawn from the cabinet body.

So that the bolt can clearly engage in the retracted position of the extensible frame, it is necessary for the extensible frame to be guided in a non-twistable manner. For this purpose, one embodiment provides four telescopic bars mounted on securing bars, which extend in pairs from the rear, vertical frame portions to the front, vertical frame portions of the frame and are connected to the latter portions.

If, in such case, provision is made for the securing bars to be provided with vertically bent end portions, whereby said bars are mounted on the frame portions of the frame, the central portions of the securing bars, facing one another, being provided with telescopic bars, and the horizontal spacing between the telescopic bars, which are associated with one another,

is adapted to the width of the extensible frame, then an extensible frame of a smaller width can also be fitted into a cabinet body of a greater width.

According to a preferred embodiment, the spring-loaded bolt is centrally mounted on the lower, horizontal frame portion of the extensible frame and is vertically adjustable, and the abutment, which is fixed to the cabinet body, is formed by a cross-piece member, which is mounted on the two lower securing bars. The tensile force, exerted on the handle, is then transferred symmetrically to the two extension sides of the extensible frame.

The cross-piece member according to one embodiment is an open hollow profile portion, which is provided with a slot extending in the longitudinal direction. The bolt, which has a thickness corresponding to the width of the slot, engages in this slot. In such case, the locking operation is facilitated in that the bolt extends into an inclined notch at its free end.

The installation of component carriers or the like in the extensible frame is rendered possible, in that at least the front end surfaces of at least the front frame portions of the extensible frame are provided with rows of openings and/or bores.

If a bolt is utilised, which is released by the rotational movement of its handle, this handle is preferably a rotary knob.

The invention is explained more fully with reference to one embodiment, which is shown in the drawings. In the drawings:

Fig. 1 is a perspective, partial view of an extensible frame in the extended position, such frame being drawn from a frame of a switchgear cabinet; and

Fig. 2 is an enlarged, partial view of the bolt and abutment.

Fig. 1 illustrates the frame 10 of a switchgear cabinet and shows the vertical frame portions 11 to 14 and the upper, horizontal frame portions 15 to 17. The lower, horizontal frame portions of the frame 10 are not shown, since the extensible frame 30, with its vertical frame portions 31, 32, 36 and 37 and the horizontal frame portions 33, 34, 35, 38, 39 and 40, only extends over the upper region of the cabinet body. The horizontal frame portions 33, 34, 38 and 39, which extend from the rear end to the front end of the extensible frame 30, are connected to the extensible portions of two-part telescopic bars 25, 26, 27 and 28. The stationary portions of these telescopic bars 25 to 28 are mounted on the inner surfaces of securing bars 19, 22, 23 and 24, which face one another, said bars extending in pairs on a level with the horizontal frame portions 33, 34, 38 and 39 from the rear, vertical frame portions 12 and 13 to the front, vertical frame portions 11 and 14 of the frame 10. Just like the end portions 20 and 21 of the securing bar 19, the securing bars in such case may be provided with end portions which are bent at right angles. In consequence,

the spacing between the pairs of securing bars can be adapted to the width of the extensible frame 30. The frame 10 is terminated externally by plate-like elements, such as is indicated by the cover wall 18.

The lower, front, horizontal frame portion 40 of the extensible frame 30 is provided with the vertically adjustable, spring-loaded bolt 43, which is guided through an opening in the horizontal, bent-over portion 41 of the frame portion 40 and engages in the continuous slot 44 provided in the abutment 29, which is an open hollow profile portion. The thickness of the bolt 43 is adapted to the width of the slot 44. The hollow profile portion with the slot 44 is so mounted on the underside of the two lower securing bars 22 and 24 that, in the retracted position, the spring-loaded bolt 43 can engage in the upwardly extending slot 44 in the hollow profile portion. During the retraction movement of the extensible frame, the bolt 43 is initially raised over its inclined notch in the hollow profile portion and then, by spring-loading, engages in the slot 44. The bolt 43 is centrally disposed on the frame portion 40, so that the extension forces act uniformly on both extension sides having the pairs of telescopic bars 25 and 26 and 27 and 28 respectively. The bolt 43 can be released by the handle 42, which is a rotary knob. In such a case, the rotary knob is grasped and rotated in a clockwise direction. The bolt 43 is moved out of the slot 44 in the abutment 29, so that the extensible frame 30 can be extended from the frame 10. A bolt 43 may also be used, which is released by pulling the handle 42. In consequence, the extensible frame 30 can be released from its retracted position by a simple manipulation and be extended from the switchgear cabinet, whereby only one hand is required.

CLAIMS

1. A switchgear cabinet having an extensible frame for the installation of component carriers or the like, which switchgear cabinet is mounted so as to be extensible from the body of the switchgear cabinet by means of horizontally extending telescopic bars, the telescopic bars being secured to a frame of the switchgear cabinet, wherein a spring-loaded bolt is mounted on the extensible frame in the region of the front end facing the opening in the body of the cabinet, which bolt engages behind an abutment, which is fixed to the body of the switchgear cabinet, when the extensible frame is in its retracted position, and which bolt secures the extensible frame in this retracted position, and wherein a handle is associated with the bolt, by means of which handle the locked position of the bolt is releasable as a result of a pulling and/or rotational movement and the extensible frame is drawn from the body of the switchgear cabinet.

2. A switchgear cabinet as claimed in claim 1, wherein four telescopic bars are mounted on securing bars, which extend in pairs from the rear, vertical frame portions to the front, vertical frame portions of the frame and are connected to the latter portions.

3. A switchgear cabinet as claimed in claim 2, wherein the securing bars are provided with vertically bent end portions, whereby said bars are mounted on the frame portions of the frame, the central portions of the securing bars facing one another, being provided with telescopic bars, and the horizontal spacing between the

telescopic bars, which are associated with one another, is adapted to the width of the extensible frame.

4. A switchgear cabinet as claimed in one of claims 1 to 3, wherein the spring-loaded bolt is mounted centrally on the lower, horizontal frame portion of the extensible frame and is vertically adjustable, and wherein the abutment, which is fixed to the body of the switchgear cabinet, is formed by a cross-piece member, which is mounted on the two lower securing bars.

5. A switchgear cabinet as claimed in claim 4, wherein the cross-piece member is an open hollow profile portion having a continuous slot in one side face, and wherein the thickness of the bolt is adapted to the width of the slot.

6. A switchgear cabinet as claimed in claim 4 or 5, wherein the bolt extends into an inclined notch at its free locking end.

7. A switchgear cabinet as claimed in one of claims 1 to 6, wherein at least the front edges of at least the front frame portions of the extensible frame are provided with rows of openings and/or bores.

8. A switchgear cabinet as claimed in one of claims 1 to 7, wherein the handle for a bolt, which is releasable by means of a rotational movement, is a rotary knob.

9. A switchgear cabinet having an extensible frame for the installation of component carriers or the like substantially as hereinbefore described with reference to the accompanying drawings.